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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/734,176	12/12/2000	Takumi Mikawa	0819-466	5101

7590

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EXAMINER

LOKE, STEVEN HO YIN

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 03/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application

09/734,176

Applicant(s)

MIKAWA ET AL.

Examiner

Steven Loke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-9 is/are pending in the application.
- 4a) Of the above claim(s) 3-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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1. Claims 6-9 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The written description (page 12, lines 4-5) discloses a capacitive insulating film 3 made of a ferroelectric like $\text{SrBi}_2\text{Ta}_2\text{O}_9$. The specification never discloses a ferroelectric film includes a crystal composed of Sr, Bi, Ta and O as claimed in claim 6. The specification also never discloses the ferroelectric film include a crystal that does not include Ti as claimed in claim 8.

2. Claim 9 is objected to because of the following informalities: It is unclear why the claimed subject matters of claim 9 are identical to that of claim 7. Appropriate correction is required.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 6-9 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Yamazaki et al.

In regards to claim 1, Yamazaki et al. show all the elements of the claimed invention in fig. 3C. It is a semiconductor device, comprising: a lower electrode [9] formed on a

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substrate [1]; a capacitive insulating film [10] formed out of a ferroelectric film on the lower electrode; an upper electrode [11] formed on the capacitive insulating film [10]; a contact layer [12] formed on the upper electrode; an insulating film [13] formed to cover the lower electrode [9], the capacitive insulating film [10], the upper electrode [11] and the contact layer [12]; a contact hole passing through the insulating film [13] and the contact layer [12] to reach the upper electrode [11]; and a metal interconnect [14], which is defined on a part of the insulating film [13], provided at least in the contact hole and connected to the upper electrode [11], wherein the ferroelectric film includes $\text{SrBi}_2\text{Ta}_2\text{O}_9$ (SBT) (col. 3, line 32, col. 1, lines 12-13), and wherein the contact layer [12] is a single-layer film being made of a metal oxide (titanium oxide) (col. 3, line 34).

In regards to claim 6, Yamazaki et al. show all the elements of the claimed invention in fig. 3C. It is a semiconductor device, comprising: a lower electrode [9] formed on a substrate [1]; a capacitive insulating film [10] formed out of a ferroelectric film on the lower electrode; an upper electrode [11] formed on the capacitive insulating film [10]; a contact layer [12] formed on the upper electrode; an insulating film [13] formed to cover the lower electrode [9], the capacitive insulating film [10], the upper electrode [11] and the contact layer [12]; a contact hole passing through the insulating film [13] and the contact layer [12] to reach the upper electrode [11]; and a metal interconnect [14], which is defined on a part of the insulating film [13], provided at least in the contact hole and connected to the upper electrode [11], wherein the ferroelectric film includes a crystal ($\text{SrBi}_2\text{Ta}_2\text{O}_9$) composed of Sr, Bi, Ta, and O (col. 4, lines 1-19, col. 3, line 32, col. 1,

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lines 12-13), and wherein the contact layer [12] is a single-layer film being made of a metal oxide (titanium oxide) (col. 3, line 34).

In regards to claim 7, Yamazaki et al. further disclose the upper electrode [11] contains Pt (platinum) (col. 3, line 33), and wherein the metal oxide film is made of an oxide of Ti (titanium).

In regards to claim 9, Yamazaki et al. further disclose the upper electrode [11] contains Pt (platinum) (col. 3, line 33), and wherein the metal oxide film is made of an oxide of Ti (titanium).

In regards to claim 8, Yamazaki et al. show all the elements of the claimed invention in fig. 3C. It is a semiconductor device, comprising: a lower electrode [9] formed on a substrate [1]; a capacitive insulating film [10] formed out of a ferroelectric film on the lower electrode; an upper electrode [11] formed on the capacitive insulating film [10]; a contact layer [12] formed on the upper electrode; an insulating film [13] formed to cover the lower electrode [9], the capacitive insulating film [10], the upper electrode [11] and the contact layer [12]; a contact hole passing through the insulating film [13] and the contact layer [12] to reach the upper electrode [11]; and a metal interconnect [14], which is defined on a part of the insulating film [13], provided at least in the contact hole and connected to the upper electrode [11], wherein the ferroelectric film includes a crystal ($\text{SrBi}_2\text{Ta}_2\text{O}_9$) composed of Sr, Bi, Ta, and O (col. 4, lines 1-19, col. 3, line 32, col. 1, lines 12-13), and wherein the contact layer [12] is a single-layer film being made of a metal oxide (titanium oxide) (col. 3, line 34). Since Yamazaki et al. teach the

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ferroelectric film includes a crystal of $\text{SrBi}_2\text{Ta}_2\text{O}_9$, Yamazaki et al. show the ferroelectric film includes a crystal that does not include Ti (titanium).

5. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (703) 308-4920. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 308-2772. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

sl
March 6, 2003

Steven Lohr
Primary Examiner
Steven Lohr